



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

May 23, 2022

MEMORANDUM TO: Christopher Regan, Deputy Director  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

FROM: Bernard White, Senior Project Manager  
Storage and Transportation Licensing Branch  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: SUMMARY OF APRIL 6, 2022, MEETING WITH NAC  
INTERNATIONAL ON AMENDMENT NO. 13 TO THE MAGNASTOR®  
STORAGE SYSTEM

A handwritten signature in blue ink, appearing to read "Bernard White", is located to the right of the "FROM:" field.

Signed by White, Bern  
on 05/23/22

Background

On April 6, 2022, a virtual, meeting was held, at the request of NAC International (NAC) with the U.S. Nuclear Regulatory Commission (NRC) to discuss NAC's proposed submittal for Amendment No. 13 to the Model No. MAGNASTOR® storage system. The list of meeting attendees is provided as Enclosure 1. The non-proprietary presentation slides are provided as Enclosure No. 2, the proprietary presentation slides are provided as Enclosure No. 3.

Discussion

During the open portion of the meeting, NAC provided a high-level overview of the proposed amendment request, including scope, design changes, and proposed contents. During this portion NRC questioned whether the fuel bearing material, much of which is contained in the reactor coolant system and associated piping, is within the scope of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste." Based on the slide presentations, there did not appear to be any fuel assembly structure which appears to mean the material would not be considered spent fuel. While 10 CFR Part 72 does include greater than Class C waste, under the scope of 10 CFR Part 72 its licensing is only applicable to specifically licensed independent spent fuel storage installations. Based on NRC staff review of the slides prior to the meeting, this amendment might not be within the scope of 10 CFR Part 72. NAC and NRC agreed to table the discussion to provide time to review the statements of consideration for previous rulemakings to 10 CFR Part 72.

CONTACT: Bernard White, NMSS/DFM  
(301) 415-6577

In the closed portion of the meeting, NAC provided details on the contents and changes to the cask design, along with details on its proposed structural, thermal, shielding and criticality evaluations. The contents will consist primarily of reactor coolant system components with varying sizes of fuel debris adhered to it. To store this debris, NAC is proposing to use an existing concrete cask along with a modified transportable storage canister (TSC). The modifications to the TSC will primarily consist of new internals to accommodate the debris. Since the contents will include non-metallic components, there will be an evaluation of hydrogen gas generation.

NAC provided an overview of the changes to the TSC and its internals that it will propose, including the codes and standards for the new components. NAC briefly discussed the proposed structural evaluation for Amendment 13, which is consistent with previous approvals. The like approved TSCs, the modified TSC and its internals will be designed to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

Since the decay heat and source term are both lower compared to currently-approved spent fuel contents, NAC is proposing a thermal analysis that will bound all potential loadings and configurations. NAC's results show that there is large margin to the maximum temperatures for any of the cask components and contestants.

NAC provided an overview of its nuclear evaluations for shielding and criticality safety. Since the source term and, their corresponding dose rates for the proposed contents is much lower than for spent fuel, NAC is proposing to not perform offsite or occupational dose analysis since existing analyses are bounding. Similar to the thermal and shielding evaluations, to demonstrate criticality safety, NAC is proposing an evaluation for both contents and configuration that significantly bounds the proposed loading for any canister. NAC evaluated the enrichment of the material; and proposed impurities and packing fraction of the fuel bearing components to provide a bounding analysis. NAC estimated the amount of uranium in the fuel bearing material that could be placed in a canister and still remain below the upper subcritical limit for optimum moderation.

While NAC stated that it is proposing to submit the application in early summer 2022, a key takeaway for NRC is to evaluate whether the scope of 10 CFR Part 72, include this type of material.

Docket No. 72-1031  
EPID No. L-2022-LRM-0027

Enclosures:

1. Meeting Attendees
2. Non-Proprietary Slides
3. Proprietary Slides

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AMENDMENT NO. 13 TO THE MAGNASTOR® STORAGE SYSTEM

DOCUMENT DATE: May 23, 2022

Closes EPID No. L-2022-LRM-0027

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NRC Meeting Attendees

K. Jamerson, NMSS

H. Lindsay, NMSS

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## MEETING ATTENDEES

Meeting Title: SUMMARY OF APRIL 6, 2022, MEETING WITH NAC INTERNATIONAL ON  
AMENDMENT NO. 13 TO THE MAGNASTOR® STORAGE SYSTEM

Date: April 6, 2022

Location: Teleconference

<b>U.S. Nuclear Regulatory Commission Attendees</b>
Bernie White
Chris Bajwa
Jimmy Chang
Darrell Dunn
Eliezer Goldfeiz
Loren Howe
Yong Kim
Patrick Koch
Matthew Learn
Sujit Samaddar
Alexis Sotomayor-Rivera
Chris Sydnor
John Wise
<b>NAC International Attendees</b>
George Carver
Eric Shewbridge
Heath Baldner
Holger Pfeifer
Wren Fowler

<b>Members of the Public</b>

Summary of April 6, 2022, Meeting with NAC International on Amendment No. 13 DATE May 23, 2022

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KJamerson, NMSS/MSST/MSEB

HLindsay, NMSS/DFM/IOB

BWhite, NMSS/DFM/STLB

CBajwa, NMSS/DFM/CTCFB

FChang, NMSS/DFM/CTCFB

DDunn, NMSS/DFM/MSB

EGoldfeiz, NMSS/DFM/NARAB

LHowe, NMSS/DFM/MSB

YKim, NMSS/DFM/MSB

PKoch, NMSS/DFM/MSB

MLearn, NMSS/DFM/IOB

SSamaddar, NRR/DEX/ESEB

ASotomayor-Rivera, NMSS/DFM/NARAB

CSydnor, NRR/DNRL/NVIB

JWise, NMSS/DFM/MSB

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OFFICE	NMSS/DFM/STLB	NMSS/DFM/STLB	NMSS/DFM/STLB	NMSS/DFM/STLB
NAME	BWhite <i>BW</i>	WWheatley <i>WW</i>	YDiaz-Sanabria <i>YD</i>	BWhite <i>BW</i>
DATE	May 18, 2022	May 19, 2022	May 19, 2022	May 23, 2022

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